Formal Development and Verification of Safe Railway Control Systems

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Challenges

Before 2021 all Danish signalling systems are going to be replaced with modern computer based systems. Central parts of these systems consist of *safety-critical software*.

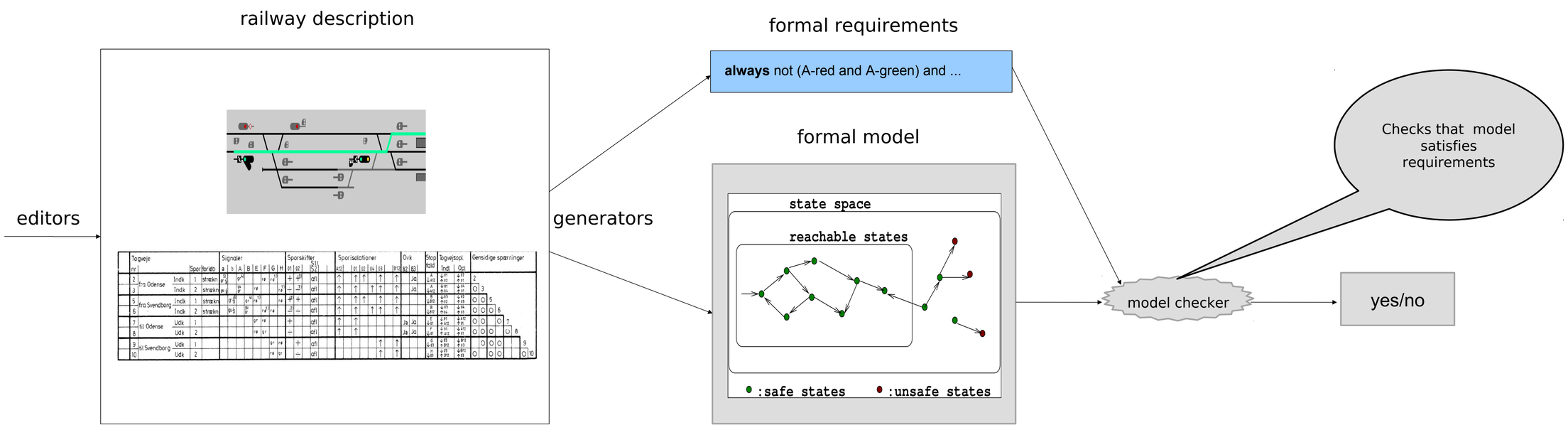
Challenges: How to develop such new systems *efficiently* (i.e. cheap and fast) and at the same time ensure that they are *safe*?

Research Goals of a Forthcoming PhD project

Research how to provide efficient methods and tools for development of safe railway control software.

The main approach to achieve this is to use of *automation* and *formal methods.*

Solution Ideas



Key idea is to provide:

- railway domain-specific language
- re-usable formal requirements and models
- tools for automated generation of concrete, formal requirements and models from domain-specific descriptions
- techniques and tools for formal, automated verification

RobustRailS

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